

Notice of Allowability	Application No.	Applicant(s)	
	10/051,761	GROE, JOHN B.	
	Examiner	Art Unit	
	Lana N Le	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/30/05.
2. ☒ The allowed claim(s) is/are 2-8 and 10-15.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 62005.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with applicant's representative, Dan Tagliaferri on 06/20/05.

3. The application has been amended as follows:

In the Claims:

- in claim 2, line 2, before "LNA", delete "a" and add --an--;
- in claim 2, line 2, before "RF", delete "a" and add --an--;
- in claim 3, line 1, before "a", delete "The radio receiver of claim 2, further comprising" and add --- A radio receiver having an LNA to receive an RF signal and produce an amplified signal that is coupled to a down-converting mixer that produces a mixer output, and the radio receiver comprises:

- a peak detector coupled to receive the mixer output to produce a peak signal;
 - an integrator coupled to the peak detector to receive the peak signal and produce an integrated signal;-----;

- in claim 3, line 2, before "mixer", delete "third" and add "second";
- in claim 3, line 2, before "output", delete "the" and add --an--;
- in claim 3, line 4, before "reciprocal", add ---the---

- in claim 6, line 1, after "comprising", delete "a" and add --an--;
- in claim 4, line 3, after "includes", delete "a" and add --an--;
- in claim 5, line 2, after "output", add "of the downconverting mixer";
- in claim 6, line 1, after "comprising", delete "a" and add ---an---
- in claim 7, line 3, after "includes", delete "a" and add ---an---
- in claim 7, line 11, after "wherein", add ---the---
- in claim 8, line 1, after "VCO", delete "control current" and add ---current control signal---
- in claim 11, line 3, after "includes", delete "a" and add ---an---
- in claim 12, line 3, after "adjust the down-converting mixer", add ---in order---
- in claim 14, line 12, after "wherein", add ---the---

Drawings

The drawing, figure 5, is objected to because they fail to label "the peak detector". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

REASON FOR ALLOWANCE

5. Claims 2-8 and 10-15 are allowable over the cited prior art as stated in allowable subject matter of the previous office action, filed 11/30/04.

6. The following is an examiner's statement of reasons for allowance:

Regarding claim 2, Den Braber (US 5,440,586), discloses a radio receiver (fig. 1) having an amplifier (within RF input section IRF; col 4, lines 64-67) to receive an RF

Art Unit: 2685

signal (via antenna ANT) and produce an amplified signal that is coupled to a down-converting mixer (2) that produces a mixer output (col 6, lines 16-25), and the radio receiver comprises:

- a peak detector (peak detector 9) coupled to receive the mixer output (mixing product) to produce a peak signal (col 6, lines 29-48);

- an integrator (11) coupled to the peak detector (9) (col 6, lines 32-38).

- a second mixer (8) coupled to receive an integrated signal combined with the mixing product (col 6, lines 51-56).

However, Den Braber and the cited prior art do not disclose:

- the integrator to receive the peak signal and produce an integrated signal;

- the second mixer coupled to receive the integrated signal and a transmit power indicator to produce a current control signal that is coupled to the LNA to control a bias current of the LNA, wherein cross modulation associated with the received RF signal is reduced.

Regarding claim 3, Den Braber (US 5,440,586), discloses a radio receiver (fig. 1) having an amplifier (within RF input section IRF; col 4, lines 64-67) to receive an RF signal (via antenna ANT) and produce an amplified signal that is coupled to a down-converting mixer (2) that produces a mixer output (col 6, lines 16-25), and the radio receiver comprises:

- a peak detector (peak detector 9) coupled to receive the mixer output (mixing product) to produce a peak signal (col 6, lines 29-48);

- an integrator (11) coupled to the peak detector (9) (col 6, lines 32-38).

a second mixer (8) coupled to receive the mixing product from an amplifier 4 coupled to an integrator output (col 6, lines 51-56).

However, Den Braber and the cited prior art do not disclose:

the integrator to receive the peak signal and produce an integrated signal;
the second mixer coupled to an output of the integrator and a receiver gain control signal to produce a VCO current control signal that is coupled to a VCO associated with a PLL that drives the down-converting mixer, wherein the reciprocal mixing associated with the received RF signal is reduced by adjustment of the VCO associated with the PLL.

Regarding claim 4, Den Braber (US 5,440,586), discloses an adaptive system for use with a radio receiver to adapt to interfering signals associated with a received RF signal, the radio receiver having an amplifier (within RF input section 1RF; col 4, lines 64-67) to receive an RF signal (via antenna ANT) and produce an amplified signal that is coupled to a down-converting mixer (2) that produces a mixer output (col 6, lines 16-25), and the radio receiver comprises:

a peak detector (peak detector 9) coupled to receive the mixer output (mixing product) to produce a peak signal (col 6, lines 29-48);

an integrator (11) coupled to the peak detector (9) (col 6, lines 32-38).

a second mixer (8) coupled to receive the mixing product from an amplifier 4 coupled to an integrator output (col 6, lines 51-56).

However, Den Braber and the cited prior art do not disclose:

the integrator to receive the peak signal and produce an integrated signal;

the second mixer coupled to receive the integrated signal and a transmit power indicator to produce a current control signal that is coupled to the LNA to control a bias current of the LNA, wherein cross modulation associated with the received RF signal is reduced.

Regarding claim 7, Dacus et al (US 6,223,061) disclose an adaptive system (apparatus comprising transmitter of fig. 2, and receiver, fig. 9; col 13, lines 59-61) for use with a radio receiver (fig. 9), to adapt to interfering signals associated with a received RF signal, the radio receiver includes an LNA (low noise amplifier 308) to receive the RF signal (from antenna 304) and produce an amplified signal (309) that is coupled to a down-converting mixer (first mixer 310) that produces a mixer output (313), the adaptive system comprises:

- a peak detector and integrator (within averaging circuit 324) coupled to receive a second mixer output (317) of a second mixer (316) to produce an average signal (325) (col 15, lines 3-15);

- a second mixer coupled to a local oscillator synthesizer that drives the second mixer.

However, Dacus et al and the cited prior art do not disclose:

- the peak detector coupled to receive the mixer output;
- an integrator coupled to the peak detector to receive the peak signal and produce an integrated signal;
- a second mixer coupled to the integrated signal and a receiver gain control signal to produce a VCO current control signal that is coupled to a VCO associated with a PLL

that drives the down-converting mixer, wherein reciprocal mixing associated with the received RF signal is reduced by adjustment of the VCO associated with the PLL.

Regarding claim 11, Dacus et al (US 6,223,061) disclose an adaptive system (apparatus comprising transmitter of fig. 2, and receiver, fig. 9; col 13, lines 59-61) for use with a radio receiver (fig. 9), to adapt to interfering signals associated with a received RF signal, the radio receiver includes an LNA (low noise amplifier 308) to receive the RF signal (from antenna 304) and produce an amplified signal (309) that is coupled to a down-converting mixer (first mixer 310) that produces a mixer output (313), the adaptive system comprises:

However, Dacus et al and the cited prior art do not disclose:

- a nonlinear element coupled to receive the mixer output to produce a peak signal;

- an integrator coupled to the non-linear element to produce an integrator output, and a second mixer coupled to receive the integrator output and a receiver power indicator to produce a receive control signal.

Regarding claim 13, Dacus et al (US 6,223,061) disclose a method for providing an adaptive system (apparatus comprising transmitter of fig. 2, and receiver, fig. 9; col 13, lines 59-61) for use with a radio receiver (fig. 9), to adapt to interfering signals associated with a received RF signal, the radio receiver includes an LNA (low noise amplifier 308) to receive the RF signal (from antenna 304) and produce an amplified signal (309) that is coupled to a down-converting mixer (first mixer 310) that produces a mixer output (313), the method comprising steps of:

deriving a peak signal and integrating (via averaging circuit 324) from a second mixer output (317) of a second mixer (316) to produce an average signal (col 15, lines 3-15);

mixing the average signal (325) via the second mixer (316).

However, Dacus et al and the cited prior art do not disclose:

deriving a peak signal from the first mixer output;

integrating the peak signal to produce an integrated signal;

mixing the integrated signal and a transmit power indicator to produce a current control signal, and

controlling a bias current of the LNA with the current control signal, wherein cross modulation associated with the received RF signal is reduced.

Regarding claim 14, Dacus et al (US 6,223,061) disclose a method for providing an adaptive system (apparatus comprising transmitter of fig. 2, and receiver, fig. 9; col 13, lines 59-61) for use with a radio receiver (fig. 9), to adapt to interfering signals associated with a received RF signal, the radio receiver includes an LNA (low noise amplifier 308) to receive the RF signal (from antenna 304) and produce an amplified signal (309) that is coupled to a down-converting mixer (first mixer 310) that produces a mixer output (313),
the method comprising steps of:

deriving a peak signal and integrating (via averaging circuit 324) from a second mixer output (317) of a second mixer (316) to produce an average signal (col 15, lines 3-15);

mixing the average signal (325) via the second mixer (316).

However, Dacus et al and the cited prior art do not disclose:

deriving a peak signal from the first mixer output;

integrating the peak signal to produce an integrated signal;

mixing the integrated signal and a receive power indicator to produce a VCO control signal, and controlling a VCO based on the VCO control signal, wherein the VCO is associated with a PLL coupled to the down-converting mixer, and wherein reciprocal mixing associated with the received RF signal is reduced by adjustment of the VCO associated with the PLL.

Regarding claim 15, Dacus et al (US 6,223,061) disclose a method for providing an adaptive system (apparatus comprising transmitter of fig. 2, and receiver, fig. 9; col 13, lines 59-61) for use with a radio receiver (fig. 9), to adapt to interfering signals associated with a received RF signal, the radio receiver includes an LNA (low noise amplifier 308) to receive the RF signal (from antenna 304) and produce an amplified signal (309) that is coupled to a down-converting mixer (first mixer 310) that produces a mixer output (313), the method comprising steps of:

deriving a peak signal and integrating (via averaging circuit 324) from a second mixer output (317) of a second mixer (316) to produce an average signal (col 15, lines 3-15);

mixing the average signal (325) via the second mixer (316).

However, Dacus et al and the cited prior art do not disclose:

deriving a peak signal from the first mixer output;

integrating the peak signal to produce an integrated signal;
mixing the integrated signal and a receive power indicator to produce a receive control signal; and
controlling the down-converting mixer based on the receive control signal, wherein intermodulation distortion associated with the received RF signal is reduced.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Whitecar et al (US 5,465,406), Automatic Gain Control Overshoot Limiter for AM Receiver.

- Mucke et al (US 5,548,616), Spread Spectrum Radiotelephone Having Adaptive Transmitter Gain Control.

- Kim (US 2004/0,203,548), Measurement Of Local Oscillation Leakage In A Radio Frequency Integrated Circuit.

Art Unit: 2685

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana N Le whose telephone number is (703) 308-5836.

The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in cursive script, appearing to read "Lana Le".

Lana Le

June 20, 2005